

ABSTRACT

~~Disclosed is a~~ A method for manufacturing a gallium nitride (GaN)-based single crystalline substrate ~~comprising~~ includes the steps of (a) forming a GaN-based single crystalline bulk on an upper surface of a growth substrate; (b) forming grooves through the growth substrate so that the growth substrate is patterned and divided into several units by the grooves, each of the grooves having a designated width; and (c) separating the GaN-based single crystalline bulk from the growth substrate by irradiating a laser beam on a lower surface of the growth substrate.